Complete Summary

GUIDELINE TITLE

Dyspnea.

BIBLIOGRAPHIC SOURCE(S)

Batra PV, Davis SD, Aquino SL, Goodman PC, Haramati LB, Khan A, Leung AN, McLoud TC, Rosado de Christenson ML, Rozenshtein A, White CS, Kaiser LR, Raoof S, Expert Panel on Thoracic Imaging. Dyspnea. [online publication]. Reston (VA): American College of Radiology (ACR); 2006. 4 p. [14 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Westcott J, Davis SD, Fleishon H, Gefter WB, Henschke CI, McLoud TC, Pugatch RD, Sostman HD, Tocino I, White CS, Yankelevitz D, Bode FR. Dyspnea. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000 Jun;215 (Suppl):641-3.

The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Dyspnea

Note: This guideline does not include two of the most serious causes of dyspnea (congestive heart failure [CHF] and pulmonary thromboembolism) because they are dealt with elsewhere (see American College of Radiology [ACR] Appropriateness Criteria® cardiovascular and thoracic guidelines).

GUIDELINE CATEGORY

Diagnosis
Evaluation

CLINICAL SPECIALTY

Cardiology
Family Practice
Internal Medicine
Pulmonary Medicine
Radiology

INTENDED USERS

Health Plans
Hospitals
Managed Care Organizations
Physicians
Utilization Management

GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of initial radiologic examinations for patients with dyspnea

TARGET POPULATION

Patients with dyspnea

INTERVENTIONS AND PRACTICES CONSIDERED

1. X-ray, chest
2. Computed tomography (CT), chest, high resolution

MAJOR OUTCOMES CONSIDERED

Utility of radiologic examinations in differential diagnosis

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of peer-reviewed medical journals and the major applicable articles were identified and collected.

NUMBER OF SOURCE DOCUMENTS

The total number of source documents identified as the result of the literature search is not known.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Not Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not stated

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

One or two topic leaders within a panel assume the responsibility of developing an evidence table for each clinical condition, based on analysis of the current literature. These tables serve as a basis for developing a narrative specific to each clinical condition.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Since data available from existing scientific studies are usually insufficient for meta-analysis, broad-based consensus techniques are needed for reaching agreement in the formulation of the appropriateness criteria. The American College of Radiology (ACR) Appropriateness Criteria panels use a modified Delphi technique to arrive at consensus. Serial surveys are conducted by distributing questionnaires to consolidate expert opinions within each panel. These questionnaires are distributed to the participants along with the evidence table and narrative as developed by the topic leader(s). Questionnaires are completed by participants in their own professional setting without influence of the other members. Voting is conducted using a scoring system from 1-9, indicating the least to the most appropriate imaging examination or therapeutic procedure. The survey results are collected, tabulated in anonymous fashion, and redistributed after each round. A maximum of three rounds is conducted and opinions are unified to the highest degree possible. Eighty percent agreement is considered a

consensus. This modified Delphi technique enables individual, unbiased expression, is economical, easy to understand, and relatively simple to conduct.

If consensus cannot be reached by the Delphi technique, the panel is convened and group consensus techniques are utilized. The strengths and weaknesses of each test or procedure are discussed and consensus reached whenever possible. If "No consensus" appears in the rating column, reasons for this decision are added to the comment sections.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria®

Clinical Condition: Dyspnea

Variant 1: Any age, positive physical examination.

Radiologic Exam Procedure	Appropriateness Rating	Comments
X-ray, chest	9	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Variant 2: Older than age 40, negative physical examination.

Radiologic Exam Procedure	Appropriateness Rating	Comments
X-ray, chest	8	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Variant 3: Younger than age 40, negative physical exam. Positive with other symptom, severe dyspnea, or other risk factors.

Radiologic Exam Procedure	Appropriateness Rating	Comments
X-ray, chest	8	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Variant 4: Younger than age 40, negative physical examination.

Radiologic Exam Procedure	Appropriateness Rating	Comments
X-ray, chest	No consensus	The appropriateness of chest radiography varies and is influenced by several factors, including the severity and duration of dyspnea, the presence of other symptoms, and the presence of other risk factors (cardiovascular, pulmonary, and neoplastic diseases).
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Variant 5: Any age, nonrevealing or nondiagnostic clinical, standard radiography, and laboratory studies.

Radiologic Exam Procedure	Appropriateness Rating	Comments
CT, chest, high resolution	7	Consider radiation exposure risk from CT in young patients (below the age of 20 years), particularly in women.
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9		

Radiologic Exam Procedure	Appropriateness Rating	Comments
1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the table are listed at the end of the "Major Recommendations" field.

The literature is sparse on whether a chest radiograph is justified in patients with acute or chronic dyspnea. Most studies pertain to dyspnea in combination with other respiratory symptoms rather than as an isolated event. These studies are included under the Acute Respiratory Illness Appropriateness Criteria topic. This section does not include two of the most serious causes of dyspnea (congestive heart failure [CHF] and pulmonary thromboembolism) because they are dealt with elsewhere (see ACR Appropriateness Criteria® cardiovascular and thoracic sections).

Two studies suggest that the chest radiograph adds enough additional useful information to recommend its routine use in patients with chronic and acute dyspnea. Another study found that acute dyspnea was a strong predictor of radiographic abnormality in patients older than age 40 (only 14% had normal chest radiographs). In dyspneic patients younger than age 40, chest radiographs were normal in 68% and revealed acute and chronic findings in 13% and 18%, respectively. Of the patients with acute findings, the vast majority had either a positive physical examination or hemoptysis. The authors concluded that the chest radiograph was not warranted in patients younger than age 40 unless the physical examination was positive or the patient had hemoptysis.

It is recognized that the decision-making process in the individual patient is affected by factors other than just the presence or absence of dyspnea, including the severity of dyspnea and the presence or absence of other symptoms and other risk factors (cardiovascular, pulmonary, and neoplastic diseases). In clinical practice, chest radiography is usually performed as part of the initial evaluation of dyspnea. One review stated that the most useful methods for evaluating dyspnea are the electrocardiogram (ECG) and chest radiograph. In another study, the chest radiographs were helpful in making a diagnosis in 66% of the hospitalized patients admitted for other reasons and referred to respiratory physicians for breathlessness.

Although computed tomography (CT) is not recommended for the initial evaluation of patients with dyspnea (except for patients with suspected pulmonary embolism), it is frequently appropriate in patients when the results of the clinical, plain film, and laboratory studies are either nonrevealing or nondiagnostic. Many diseases, including bronchiectasis, sarcoidosis, emphysema, pneumoconiosis, idiopathic pulmonary fibrosis, Langerhans cell histiocytosis, hypersensitivity pneumonitis, bronchiolitis obliterans, and lymphangitic cancer, have features characteristic enough to enable experienced radiologists to make a confident, probable, or limited differential diagnosis in most cases. Biopsy and additional diagnostic testing are often unnecessary. CT and high-resolution CT (HRCT) may reveal an abnormality even when the chest radiograph is normal.

Recommendation

Based on a limited number of studies, chest radiography seems indicated when dyspnea is chronic or severe or when there are associated risk factors (older than age 40, cardiovascular, pulmonary, or neoplastic disease), other signs or symptoms, or positive findings on the physical examination. The rationale for performing chest radiography in acutely dyspneic patients younger than age 40 is less compelling, and there does not appear to be strong support in the literature for either performing or not performing chest radiography when there are no other symptoms or risk factors and when the physical examination is normal.

CT and HRCT should be considered when the initial evaluation of the dyspneic patient is nonrevealing or when it reveals abnormality but no definitive diagnosis.

Abbreviation

- CT, computed tomography

CLINICAL ALGORITHM(S)

Algorithms were not developed from criteria guidelines.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on analysis of the current literature and expert panel consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Selection of appropriate radiologic imaging procedures for evaluation of patients with dyspnea

POTENTIAL HARMS

Risk of radiation exposure from computed tomography (CT) in young patients (below the age of 20 years), particularly in women

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

An American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring

physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those exams generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Personal Digital Assistant (PDA) Downloads

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Batra PV, Davis SD, Aquino SL, Goodman PC, Haramati LB, Khan A, Leung AN, McLoud TC, Rosado de Christenson ML, Rozenshtein A, White CS, Kaiser LR, Raoof S, Expert Panel on Thoracic Imaging. Dyspnea. [online publication]. Reston (VA): American College of Radiology (ACR); 2006. 4 p. [14 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1995 (revised 2006)

GUIDELINE DEVELOPER(S)

American College of Radiology - Medical Specialty Society

SOURCE(S) OF FUNDING

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria®.

GUIDELINE COMMITTEE

Committee on Appropriateness Criteria, Expert Panel on Thoracic Imaging

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Panel Members: Poonam V. Batra MD; Sheila D. Davis, MD; Suzanne L. Aquino, MD; Philip C. Goodman, MD; Linda B. Haramati, MD; Arfa Khan, MD; Ann N. Leung, MD; Theresa C. McLoud, MD; Melissa L. Rosado de Christenson, MD; Anna Rozenshtein, MD; Charles S. White, MD; Larry R. Kaiser, MD; Suhail Raoof, MBBS

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

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The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

ACR Appropriateness Criteria® Anytime Anywhere™ (PDA application). Available from the ACR Web site.

Print copies: Available from the American College of Radiology, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- ACR Appropriateness Criteria®. Background and development. Reston (VA): American College of Radiology; 2 p. Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on August 28, 2006.

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DISCLAIMER

NGC DISCLAIMER

Readers with questions regarding guideline content are directed to contact the guideline developer.

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